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APPLICATION OF LANDSAT IMAGERY IN LAND USE INVENTORY
AND CLASSIFICATION IN NEBRASKA

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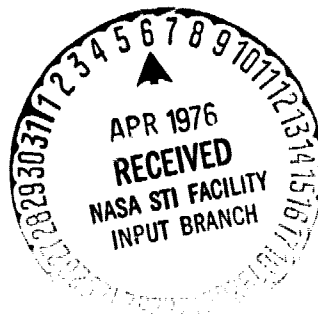
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Marvin P. Carlson and Paul M. Seevers
Conservation and Survey Division
University of Nebraska-Lincoln
Lincoln, Nebraska 68588

Type II Report for Period December 10, 1975 to March 10, 1976

Prepared for
GODDARD SPACE FLIGHT CENTER
Greenbelt, Maryland 20771



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4. Title and Subtitle Application of LANDSAT imagery in land use inventory and classification in Nebraska		5. Report Date March 10, 1976	
7. Author(s) Marvin P. Carlson and Paul M. Seavers <i>into</i>		8. Performing Organization Report No.	
9. Performing Organization Name and Address Conservation and Survey Division University of Nebraska-Lincoln Lincoln, Nebraska 68588		10. Work Unit No.	
		11. Contract or Grant No. NAS5-20814	
12. Sponsoring Agency Name and Address Goddard Space Flight Center Greenbelt, Maryland 20771 Edmund F. Szajna, Technical Officer		13. Type of Report and Period Covered Type II Progress Rept. December 10, 1975 to March 10, 1976	
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15. Supplementary Notes Report Number 4			
16. Abstract Evaluation of color infrared aerial photography has shown that a slight decrease in accuracy can be expected due to loss of much of the infrared signature of crops. Additional field trips are planned to resolve some of the interpretation difficulties. Initial computer runs have indicated software is functional for data retrieval.			
<p style="text-align: center;">ORIGINAL PAGE IS OF POOR QUALITY</p>			
17. Key Words (Selected by Author(s)) Land use classification		18. Distribution Statement	
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Figure 2. Technical Report Standard Title Page

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ORIGINAL PAGE IS

PREFACE

This report covers the contract period December 10, 1975 to March 10, 1976, for the investigation evaluating the application of LANDSAT imagery in land use inventory and classification in Nebraska (Marvin P. Carlson, Principal Investigator, NAS5-20814).

During this reporting period LANDSAT data of usable quality continues to be received. Color infrared aerial photography from September 25 and 26, 1975 flights has been evaluated. Because the aerial coverage was relatively late in the growing season, additional difficulties in interpretation will lower accuracy percentages. One additional field trip to each area is planned to collect additional ground truth to help resolve interpretation problems encountered in sample areas classified.

Goddard Space Flight Center software "Digital image rectification system" (DIRS) has been requested as an aid to evaluation of computer compatible tape data. The software will not be available until early summer.

MAIN TEXT

- A. Problems The late September aircraft coverage showed that the imagery crops had lost much of their infrared signature. Our best estimates at this time indicate that the accuracy of interpretation for these areas will decrease by five to ten percent because of the late flights. However, the data will be acceptable for most users at that level.

A major problem encountered in evaluation of computer compatible tapes is the ability to accurately locate individual fields or areas in the data. Goddard Space Flight Center has developed a software package which is designed to address this very problem. Phone conversations with Goddard personnel indicate the package is undergoing verification and will then be forwarded to another agency for distribution. Going through a second agency means additional non-availability of several months to us. Considerable time could be saved if the software could be provided to contract investigators directly from Goddard.

- B. Accomplishments Comparison of ground truth data with acquired high altitude aircraft color infrared photography has been completed for both test areas flown in 1975. Specific criteria have been developed for each area for maximum effective interpretation. Testing has been conducted to determine relative accuracy errors. It would appear that decreased infrared reflectivity of crops will result in a five to ten percent decrease in accuracy, as compared to previous land use classification sites.

Additional areas, outside of ground truth test sites, have been classified to determine what problems may be encountered in classification. One additional field trip is planned for each area to confirm classifications and obtain additional information to resolve classification problems.

Sufficient computer runs have been completed to assure retrieval of data from computer compatible tapes. Locations of data on tapes in relation to actual ground locations are nearly impossible to coordinate. It is anticipated that the DIRS package will solve much of that difficulty. Until the DIRS package is on board ground location is dependent on ground features easily recognizable in the tape data.

- C. Significant Results No significant results were obtained during this reporting period.
- D. Publications No publications resulted from the project during this reporting period.
- C. Recommendations No recommendations are suggested at this time.
- F. Funds Expended During the reporting period \$6,684 were expended for salaries, \$432 were expended for support and \$6,743 were applied against indirect costs.
- G. Data Use As of March 3, 1976 account status was:

<u>Account</u>	<u>Budgeted</u>	<u>Spent</u>	<u>Balance</u>
LANDSAT	\$11,300	\$4,425	\$6,875
CCT	\$ 4,000	-----	\$4,000
Aircraft	\$ 3,744	\$3,666	\$ 78

- H. Aircraft Data No additional aircraft data was received during this reporting period.